

Memorandum

To: CAISO Board of Governors
From: Keith Casey, Director, Market Monitoring
Date: August 29, 2008
Re: *Market Monitoring Report*

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides a brief status update on the market monitoring readiness activities for the Market Redesign and Technology Upgrade (MRTU). As reported at the July 9, 2008, Board of Governors meeting, market monitoring readiness activities consist of three main functional areas: 1) base monitoring capabilities for general market performance, 2) monitoring and analysis capabilities for specific issues (e.g., effectiveness of local market power mitigation), and 3) rapid response capabilities to quickly remedy any market issues that might arise after MRTU goes live.

Good progress has been made in each of these areas since the July 9 Board meeting. However, as discussed below, some outstanding items remain that we are aggressively working to resolve.

DISCUSSION

1. Base Monitoring Capabilities

Readiness activities relating to base monitoring capabilities involve making sure that the Department of Market Monitoring (DMM) has sufficient market data, analysis tools, and staff training to adequately monitor general market performance. Examples of general market performance monitoring include tracking market clearing prices for trends and anomalies, tracking congestion patterns and trends, and reviewing market participant bidding and scheduling behavior.

With respect to market data, DMM has been working closely with the CAISO MRTU project team and Information Technology over the past two years to develop *Enterprise Data Repository* for MRTU. The go-live objective of this project is to make sure that all of the data needed to support market monitoring are being captured from the various MRTU software applications and saved in a centralized data repository. This objective has largely been accomplished. The repository is now receiving market data from all of the MRTU systems on a daily basis, which has enabled DMM to begin shadow monitoring the MRTU market simulation. However, DMM

has identified some additional data critical for market monitoring that are currently not being captured by the MRTU market systems. DMM is currently working with IT and the MRTU project team to determine the best approaches for capturing these additional data. Another outstanding issue concerning market data is data documentation. Current documentation of MRTU data (i.e., descriptive definitions of data fields and tables) is very incomplete and this has made using the data to develop market monitoring metrics somewhat challenging. DMM is working with the MRTU project team and the software vendors to rectify this deficiency. Timely and effective resolution of these two issues will improve progress toward developing a comprehensive monitoring system prior to implementation of MRTU.

In terms of analysis tools, DMM has largely completed all of the base metrics for market monitoring and is now beginning to test and refine those metrics through the shadow monitoring of market simulation. Additionally, the metrics and analytic approaches are being further refined through periodic internal peer review sessions where each analyst presents their set of metrics to the entire market monitoring group for feedback and recommendations. It should be noted that DMM has developed a much more advanced monitoring system for MRTU relative to its current system. The new MRTU monitoring system, which uses the latest in business intelligence technology, provides for greater automation and the ability to predefine logical analysis paths or drill down capabilities based on a simple “point and click” approach.¹

With regard to staff training, most of the DMM staff have been thoroughly trained on MRTU through formal training programs and less formal day-to-day interactions with the MRTU project team on various data or policy issues relating to MRTU. However, DMM has recently hired several new analysts who are currently completing the CAISO MRTU training series and will be receiving additional external training on LMP markets. Additionally, several staff and a manager have made two separate week-long trips to the market monitoring units of PJM Interconnection (PJM) and ISO New England. The purpose of these trips was to learn how market monitors in well established locational marginal pricing (LMP) markets approach market monitoring. The discussions focused on analytic techniques, personnel skills, and data and other resource requirements. Through these visits, they were able to pick up valuable insights on how to monitor LMP markets.

In summary, DMM is making very good progress in developing its base monitoring capabilities. The major outstanding issues relate to acquiring additional market data and adequate documentation of the MRTU market data. DMM is actively pursuing these two issues.

2. Issue-Specific Monitoring Capabilities

Over the past two years, DMM has developed a catalogue of various market design elements under MRTU that could potentially produce undesirable market behavior or market outcomes. In some cases, the concerns over particular issues have been great enough to warrant a change in the market rules (e.g., bid caps for start-up and minimum load bids). However, in most cases, the existing design feature associated with a particular concern appears to be the best option

¹ For example, one analysis path starts with a chart of ancillary services prices. An analyst can then click on one of the prices shown in the chart and be automatically taken to the supply curve of awarded ancillary service bids. The analyst can then click on each of the bid segments of that curve and the name of the generator resource will automatically be displayed.

given the potential trade-offs associated with alternative market design options or rules. In such cases, DMM believes the best approach is to closely monitor market performance and behavior to see if any of the potential concerns materialize to a level that warrants action. For these issues, DMM has been developing specific monitoring metrics and - to the extent practical - has identified contingency plans that may be implemented should the issue become significant enough to require some type of action. DMM is currently in the progress of automating many of the metrics associated with these design issues and integrating them into the overall market monitoring system described in the previous section. We expect to have base metrics associated with all of these issues in place prior to go-live.

Additionally, some of the analysis and metrics associated with these issues will be produced through market simulations using an off-line or “standalone” version of the MRTU market software. DMM has acquired a standalone version of the market software that can be used by DMM to modify input data (e.g., market bids) and review the impact these changes have on market outcomes. However, we have encountered challenges in getting the system to run consistently. We continue to work with the MRTU project team to resolve these performance issues. DMM is also working on establishing a formal maintenance agreement with IT for this standalone system after go-live so that we can be sure the system is adequately maintained and kept in sync with the production system.

3. Rapid Response Capabilities

As discussed at the last Board meeting, DMM has been leading an effort within the CAISO to establish a cross-divisional Rapid Response Team. The goal of this team is to quickly identify and correct any significant market issues that might arise once MRTU goes live. Though MRTU has been carefully designed and will be thoroughly tested before going live, unexpected market performance problems may nonetheless arise and therefore, it will be important that the CAISO have clear internal processes and delineation of roles and responsibilities to quickly identify and remedy any market problems.

The Rapid Response Team is comprised of individuals from the following CAISO departments:

- Market Monitoring
- Market & Product Development
- Market Operations/Services
- Grid Operations
- Information Technology/Support
- Legal
- Communications, Client Relations, Regulatory Affairs

The team has held several meetings over the past several months. Recent meetings have focused on reviewing the cut-over and reversion process for MRTU. The discussions focused on how, in the unlikely event that a reversion is necessary during the first month of MRTU, the decision to revert would be made, communicated (internally & externally), and executed. Several actions came out of this discussion, most of which involved further expanding and formalizing the communication plan for MRTU Go-Live. The team determined this would be an important effort regardless of whether a reversion became necessary.

The team has also been developing a complete list of the various options/tools CAISO has for addressing potential market problems under MRTU. The discussion focused on assessing which kinds of market issues would lend themselves to one resolution approach versus another. Potential tools range from using existing tariff authority for administrative pricing or exceptional dispatch to submitting a FERC filing seeking expedited consideration of a market rule change. Developing a complete list of the various options for addressing market issues and the conditions for which each is appropriate will help to ensure that the right actions are taken at the right time to quickly rectify any market issues that might arise under MRTU.

The Rapid Response Team will continue to meet regularly over the next several months to further develop processes, roles and responsibilities, and options (tools) for resolving market issues.